DOCUMENT RESUME

ED 447 293 CE 080 927

AUTHOR El Tell, Khalaf; Al-Maaitah, Ayman
TITLE Qualification and Development Needs for Technical Education.
PUB DATE 2000-04-10
NOTE 11p.; In: Cross-Roads of the New Millennium. Proceedings of the Technological Education and National Development (TEND) Conference (2nd, April 8-10, 2000, Abu Dhabi, United Arab Emirates); see CE 080 883.
AVAILABLE FROM For full text: http://crm.hct.ac.ae/proc2k.html.
PUB TYPE Opinion Papers (120) -- Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cost Effectiveness; Education Work Relationship; Educational History; *Educational Needs; Educational Trends; Employment Qualifications; Experiential Learning; Foreign Countries; Job Skills; Needs Assessment; Postsecondary Education; *Professional Development; Program Costs; Program Development; Secondary Education; Skill Development; Systems Approach; *Teacher Education; Teacher Improvement; *Teacher Qualifications; *Technical Education; Technical Institutes; Trend Analysis; *Vocational Education Teachers
IDENTIFIERS *Arab Gulf States; National Development; Oman

ABSTRACT

Vast and rapid changes in global technologies have made development of a sound and efficient system of technical education (TE) critical for Oman and the other Arab Gulf countries. Producing TE graduates with the skills needed for success in today's global economy requires TE teachers with the following qualifications: mastery of the core skills required of students; the ability to guide students through the self-learning process; the ability to assess all types of student activities; and hands-on practical experience in fields being taught. The development of TE in Oman may be discussed in terms of the following phases: (1) 1984-1994 (during which time Oman had only 1 TE college with 35 staff members who used a traditional teacher-centered approach); (2) 1994-1999 (when 4 additional regional colleges were established and student-centered education was introduced along with internal and external training courses for teaching staff and scholarships to help nearly all eligible technical educators work toward a master's degree or doctorate); and (3) 1999-present (when a General National Vocational Qualifications system similar to that in the United Kingdom was introduced). Oman's policymakers have acknowledged the cost-effectiveness of employing highly qualified TE staff and funding the training required to improve their qualifications. (MN)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 447 293

TEND 2000

Crossroads of the New Millennium

Qualification And Development Needs For Technical Education

Prepared and Presented

By

Dr. Khalaf El Tell
Associate Professor & Dean
Muscat Technical Industrial College
e-mail : hajim@gto.net.om

Dr. Ayman Al-Maaitah
Associate Professor & Head
Engineering Department
Salalah Technical Industrial College
e-mail - sat12@gto.net.om

Monday 10 April, 2000

Workshop 2

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

A. Billingsley

BEST COPY AVAILABLE

CE 080 127

Abstract

This paper discusses the needed qualification and development of teaching staff in modern technical education systems. As these systems are becoming student-centred ,then the traditional role of technical education lectureers has to be changed. The required profile of graduates based on the needs of industry and technical market needs is briefly analysed to help in setting needed skills and abilities of teaching staff in technical education institutions.The paper also discusses these characteristics in detail. Consequently, staff qualification to suit these characteristics is then discussed. Furthermore, the Omani experience in staff development and qualification setting is discussed in brief. Finally, a qualitative cost reduction mechanisms in technical education is glanced at when the right qualification of teaching staff is chosen.

Qualification and Development Needs for Technical Education

INTRODUCTION

As the world is entering the Third Millennium, the profession of Technical Education (TE) is becoming more and more demanding. Compared with other fields of education, the field of technical education is now more pronounced as " Career Oriented Education". In other words, one can say that TE is an education that aims at entitling its barrier for a certain vocation in the vast and rapidly changing world of technology. That's why some educators consider (TE) of all levels as " vocational education" [1], hence connecting it directly to the needs of labour market and industry sectors. As such, the traditional role of the " Teaching Staff " in technical education has changed tremendously. The abrupt changes in global technologies and market demand require non-traditional qualification for educators to be able to produce graduates who satisfy such needs.

For Oman and the Gulf Countries, the need for a sound and efficient system of TE is quite crucial. The importance of this subject arises from many reasons which include the following: lack of local technical labour force especially as the technical labour is the back-bone of the industry. The rejection of local industries to employ national graduates by claiming incompetence of these graduates. The social status of technically educated individuals by local commuinity., these factors, along with many other reasons, make the technical education as one of the top priorities for many development plans of Gulf Co-operation Countries (GCC).

The major aim of this paper is to highlight the special characteristics and qualifications of teachers (tutors) involved in technical education profession. Some of the proposed development plans to upgrade the traditional role of teaching staff to suit the modern requirements of TE will be discussed. The expected cost reduction in TE when suitable staff are employed is also discussed. Finally, a brief discussion of the Omani experience in the field of Technical Industrial Education is presented.

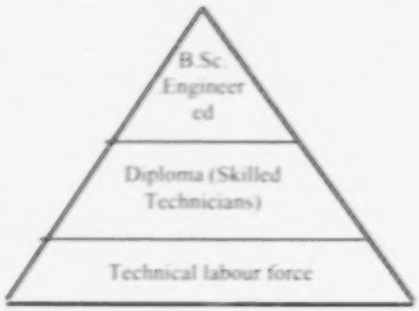
NEEDED PROFILE OF GRADUATES FROM TECHNICAL EDUCATION INSTIT

As mentioned earlier, the vast and rapid changes in global technologies, which can be seen clearly as the world is entering the 21st Century, require special profile for individuals who are seeking a career in the general Sector of Industry. This is especially obvious for the top two levels of the work-pyramid as shown in Figure 1 which demonstrates the levels of this pyramid in most technical professions specialised for the Engineering profession. The

special qualifications needed for the top tow levels (i.e. Engineers and Skilled Technicians) is now well pronounced in the demand for all industries.

For high-tech industries these qualifications are also needed for the lower level of the work pyramid (i.e. Technical labour). While these needs are still developing for traditional industries, but it will not be for long when these qualifications become a necessity.

Figure1: Work Pyramid



Based on several surveys [2,3,4] and contacts made with industries and private sectors in Muscat and Salalah Area of the Sultanate of Oman, as well as contacts with the industry sector in Jordan, we will attempt to list some of the most important characteristics and profile features needed for graduates of TE. This will help in identifying the needed qualifications for Teachers (Tutors) in the TE profession.

1- The graduate should be well-trained on self-learning technique. The expanding and changing scope of knowledge in modern industries requires individual seek enrolment in Technical sectors to be aware of up-to date on developments. Not only it is difficult for technical education institutes to teach the students all aspects of knowledge of their future profession, but also many new concepts will irrupt after their graduation and enrollment in the working sector. This requires graduates to be trained on how to acquire any new information or seek any new knowledge independently by themselves. As such, most of modern TE systems are Student-Centred Systems (SCS), thus emphasising the self-learning capabilities of the student. Graduates of such profile will be very attractive to industries since they will reduce the cost of further On-Job training and will make it more efficient.

2- The graduate have to be "well rounded" in their basic knowledge of the technical field. Since employer might decide on shifting the graduate from one line of work to another. The graduate, especially the one seeking a career in the top two levels of the work-pyramid, should have a general rounded knowledge of his/her profession. This will enable him/her to shift between different lines of work and later on to be specialised sharply utilising his/her self-learning capabilities and the on-job training programme of the employer.

3- The graduate should enjoy certain core skills, which enable him/her to progress and develop in the work environment. In any modern field of the technical profession, one should enjoy the following capabilities and skills to succeed and progress in this profession:

- Information Technology (IT) and computer skills. This includes general and specialised computer skills and capability to seek information through modern facilities like the Internet and multi media facilities.
- Communication skills (CS). The graduate has to have the minimum ability of communicating with an international language e.g. English, especially for markets of international composers like the Gulf Market. Moreover, such a skill would help the graduate to be updated with all new developments in his/her profession.
- Problem-solving techniques (PST): which include problem identification techniques, planning, and information seeking.
- Working Independently (WI) and in-groups. The graduate should be trained in teamwork procedures as well as, independent decision making techniques, as in many cases s/he cannot wait for guidance to perform a task or take a decision.

NEEDED CHARACTERISTICS OF TEACHING STAFF IN TECHNICAL EDUCATION

To achieve the desired profile of graduates from technical education institutes, the teaching staff has to enjoy certain characteristics. This is especially true since the role of the teaching staff is changing from the traditional role of being merely an information supplier to the modern role of interactive teaching-learning process. In the modern student-centred systems (SCS) of education the teacher's (or tutor's) role is becoming that of a guide for the student. The tutor should be capable of guiding students to learn by themselves rather than just to provide them with information. The tutor is to encourage students to utilise all available facilities to acquire knowledge including labs, library, self - access centres, and even through industrial liaisons. In the classroom the role of the tutor is to provide only the underpinning knowledge which is needed to help the student in his quest for the full knowledge. Moreover, the tutor should form a living amplified example of what the student should be upon graduation. As such, and from on-hand experience in managing TE institutes at various, level the following characteristics that the teacher (tutor) should enjoy to succeed in his/her mission are concluded:

1. To be quite capable of all the core skills which are required from the student as mentioned in the previous section. In many cases tutors of high academic qualification were found to be lacking the core skills which are required from the student, especially in the IT capability. That negatively affected the educational process. The level of the tutor's knowledge should be much higher than that required from the student.

2. The tutor should be able guide students during the self-learning process. The tutor should be flexible and versatile in his/her delivery techniques to push the student for self learning process. The traditional role of a "lecturer" is no more satisfactory for the tutor since guiding and monitoring role is to be practised.

3. As the assessment process is not only exam-based, the tutor has to be capable to assess all types of activities prepared by the student This requires assessment of reports, projects, behaviour, ..etc. which needs special techniques and skills of the assessment process[5].

4. The tutor should have an on- hand practical experience with the industries related to the profession he/she is preaching. Up-to-date knowledge of developments in the profession should be always attained by the tutor. Furthermore, the tutor should have current contacts and liaison with the local industry.

5. Since TE is not quite appreciated in cultures similar to that of the GCC, the tutor should be familiar with such attidude. Being an educator, the tutor should help in changing the image and the outlook of TE which certain cultures have. As such, it is prefered that the be overcome such problems.

STAFF QUALIFICATIONS NEEDED TO SUIT THE REQUIRED CHARACTERISTICS

After discussing the required profile and characteristic of teachers in the TE profession, the qualification that can secure tutors who might enjoy the needed characteristics are proposed hereby. These qualifications, of course, reflect the opinion of the authors of this paper based on their experience in the field and by no means can be considered as the unique approach to choose teachers in the TE profession. Furthermore, these qualifications are not listed according to any priority:

- Postgraduate (Master or Ph.D.) degree that is research oriented. This qualification would most likely secure two needed characteristics. The first is to secure a tutor with high level of self-learning skills which s/he acquired during the conducted research.

The other is that the tutor possesses high level of knowledge that allows him/her a wider flexibility in the delivery process. The tutor can approach the ideas from more than one side.

- Advanced capabilities of computer and Information Technology skills whether general or specialised according to the needs of the technical field. These qualifications can be checked either by documented evidences of the tutor's course of study and achievements , or by conducting special tests of these capabilities. Computer and Internet illiteracy cannot be tolerated in technical education for all levels and specialisations. Special knowledge for computer application should also be checked. For example, a tutor of Engineering Drawing should also be capable of Computer Aided Drafting (CAD).
- Training in special assessment techniques according to the chosen educational system. For example in the GNVQ system the tutor should have a D32/D35 assessment award [6]. If tutors do not have such awards, the educational institute should conduct training programme for such subject due to its importance.
- The tutor should have basic knowledge of main aspects of " Education Technology" or at least should be able to use various teaching aids and utilise modern teaching techniques. Training on such facilities and techniques is preferred.
- On- hand industrial experience related to the field of technical education. This can be achieved through either part-time or full-time contact with the industry. Contacts with industry sector is preferred.
- Communication and language proficiency. As mentioned earlier, the tutor has to be quite fluent in a suitable international language according to the teaching programme's official language (e.g. in Oman it is English). On the other hand, we prefer the tutor to be bilingual to account for the local cultural barriers and foreign language deficiency among students.

The previously mentioned qualifications can form a guideline for choosing new teaching staff in TE or can help in training and development programmes of existing staff to bridge gaps.

THE OMANI EXPERIENCE IN TECHNICAL EDUCATION

In the present section the Omani experience in Technical Education is briefly discussed. The discussion will be concentrated on the subject of staff qualification needs through the various phases of development of Technical Vocational Education in Oman.

In the Sultanate of Oman the TE institutes that provide outputs to the three levels of the work-pyramid are as follows: Sultan Qabous University, which graduates students for the higher level of the pyramid, Technical Industrial Colleges which graduate students for the second level, while Vocational Training Institutes graduate students for the third level of the pyramid. Since 1996 private institutes were formed to participate in graduating students for the second and third level of the pyramid. The regulation for private Universities already exists consequently private Universities to produce graduates for the higher level will be effective soon. However, in the present section, discussion will be confined to the experience of the Technical Industrial Colleges in Oman.. Basically the development of these Colleges have passed through three phases as follows :

Phase I (1984-1994): During this period there was only one Technical Industrial College in Muscat. The teaching system in this college was similar to the British Ordinary National Diploma. At that time there were only 35 staff members mostly of B.Sc. holders with some practical experience in industry. In this phase the teaching system was the traditional teaching approach where the student is on the receiver end of the learning process.

Phase II (1994-1999): In this phase other 4 regional colleges were established. In the 5 colleges, nearly 270, staff most of them are Ph.D. and Master degree holders, are recruted. However, the most important development was the application of a student-centred educational system, namely the GNVQ (General National Vocational Qualification) in the five colleges. There were many challenges facing this decision but the most important one was staff development since most of the available teaching staff is not familiar with this student centred educational system. This applies for the already existing staff as well as the newly recruited ones. As such, the biggest challenge was to train around 300 staff members of all qualifications and specialisations on the new techniques of the new educational system. With the help of MANCAT (Manchester College of Art and Technology) and the RSA (the Royal Society of Arts) many training and development programmes were conducted as follows:

- Interenal training: MANCAT and RSA experts conducted Many training courses for the teaching staff. Moreover, senior staff who has experience in the system conducted many in-house training. All new comers were subjected to training courses as soon as they enter the system. All existing staff have already awarded D32/D33 Assessor Award while all new comers are working toward its achievement. Those who are legible are awarded the D34/D35 internal verifier award.

- External training: Some of the permanent staff (especially Omani staff) were sent to UK to obtain on-hand knowledge in institutions already applying the GNVQ. Many of them obtained the assessors and the verifiers award from these institutions.
- Degree upgrading: nearly all-eligible Omani staff were sent on scholarship to upgrade their qualifations toward, a Masters or Ph.D. degree.

This phase continued on until an upgrade of the system is found to be in order is it is discussed in Phase III below.

Phase III, 1999-present: As the system progresses and local experience was gained, the GNVQ system was developed to an Omani educational programme which is called the Omani Diploma (OD)[7]. This programme also stresses the student-centred methodology while taking into consideration the local environment and constrains. The staff who gained the experience from the GNVQ is the same staff teaching now the OD. The system will be developed to a High National Diploma degree (HND) in co-operation with some UK awarding bodies. The Omani HND will also concentrate on self-learning skills along with all other requirements of modern technical education as discussed earlier. All newly recruited staff is to be chosen based on the qualifications mentioned earlier.

COST REDUCTION DUE TO THE RIGHT CHOICE

Although there is no quantitative analysis of cost reduction in TE when the suitable staff qualification is chosen, the managers of any modern technical institute can identify the following possible mechanism of cost reduction when the right choice of the staff is conducted:

1- Reducing the in-house training and development cost of the staff.
2- Increasing the efficiency of the teaching process and reducing the ratio of staff to student outputs while keeping high standards.
3- Optimum utilisation of the existing facilities and elimination of unnecessary duplication of these facilities.
4- Utilising local environment and local industry facilities into augmenting the existing in-house facilities.
5- Reducing the non-academic management cost and the accreditation cost of the institutes.
6- Enhancement of the graduate's level at no extra cost.

The previously mentioned mechanisms along with others justify the cost of highly qualified staff in technical education.

REFERENCES

- Deming, W. Edwards, (1982). *Out of Crisis*, Centre of Advanced Engineering Study, MIT, Cambridge, MA.
- Ernst & Young, (1996). *Oman: Private Sector Training Needs Assessment*, Bureau of Private Enterprise, US Agency for International Development,.
- Sultanate of Oman, (June 1996), *Annual Statistics Book*, Publication of Vocational Training Authority.
- Sultanate of Oman, April 1992, *Evaluation of the Training Needs for Private Sector in the Technical Field*, Publication of Vocational Training Authority.
- Dr. Pat Cryer, (1993). *Preparing for Quality Assessment Audit*, CVCP, USDU, Feb.
- "The BTEC Award Framework Guidance", *BTEC publication*, Issue 1, July 1996.
- *OD Programme Structure*, OD Steering Committee, Ministry of Social Affairs Labour and Vocational Training, 1999.